L 30013-65 EWT(1) IJP(c)
ACCESSION NR: AP5000621 S/0185/64/009/011/1176/1184

AUTHOR: Lomsadze, Yu. M.; Khimich, I. V.; Shuba, Y. M. (Shuba, I.M.) 20

TITLE: Structure of the g-plane in the relativistic Schrodinger theory 21 18 B

SOURCE: Ukrayins'ky*y fizy*chny*y zhurnal, v. 9, no. 11, 1964, 1176-1184

TOPIC TAGS: Schrodinger theory, relativistic particle, particle scattering, potential scattering, coupling constant, scattering amplitude

ABSTRACT: This is a continuation of earlier work by the authors on the partial amplitude for scattering by a nonrelativistic Yukawa potential (Preprint, Uzhgorod University, R-1, 1963; Nuclear Phys., in press) and on Bethe-Salpeter scattering (Preprint, Uzhgorod University, R-2), and the purpose of the investigation was to check whether the structure of the g-plane does not experience ap- [illegible] changes when the scattering particle possesses spin. An analysis is [illegible] of the structure of the g-plane of the partial amplitude of quantum- [illegible] scattering of a relativistic spinless particle by a Coulomb potential, [illegible] shown that the most characteristic elements of the g-plane structure for this potential will be characteristic also of the case of a Yukawa potential.

Card 1/2

L 30013-65
ACCESSION NR: AP5000621 2

The nature of the motion of the poles of the partial wave amplitude is studied along two sheets of its g-plane, with variation of the energy along the real axis in the case of an arbitrary physical $\gamma = \ell + 1/2$. The nature of the motion of the poles of this amplitude is also studied along two sheets of its E-plane with variation of g along the real axis. A detailed physical interpretation is given of both the singularities of the partial wave amplitude and of the singularities of the trajectories in the g- and E-planes. The analytic properties of the am[illegible]es of the trajectories are considered also in the nonrelativistic limit. [illegible]mination of the g-plane structure makes it possible to employ the Mittag-Leffler procedure for an effective calculation of this amplitude, using information contained in the finite number of coefficients of its formal perturbation-theory series for an arbitrary value $g \neq \gamma$. "The authors thank Professor N. N. Meyman for valuable remarks." Orig. art. has: 6 figures and 9 formulas.

ASSOCIATION: Uzhgurods'kyy derzhuniversytet (Uzhgorod State University)

SUBMITTED: 15Feb64 ENCL: 00 SUB CODE: NP, GP

NR REF SOV: 005 OTHER: 013

Card 2/2

L 2712-66

ACCESSION NR: AP5017179 UR/0139/65/000/003/0086/0094

AUTHOR: Lomsadze, Yu. M.; Khimich, I. V.; Shuba, I. M.

21
B

TITLE: On the motion of the poles of a quantum mechanical partial amplitude in the complex plane of the coupling constant

SOURCE: IVUZ. Fizika, no. 3, 1965, 86-94

TOPIC TAGS: quantum physics, scattering amplitude, analyticity, moving pole method

ABSTRACT: The authors investigate the analytic properties of a quantum-mechanical partial amplitude $f_g(l, k)$ in the complex plane of the coupling constant for a broad class of potentials, satisfying the standard conditions (approaching zero like $1/r$ as r goes to infinity, like $1/r^2$ as r goes to zero, and finite for all other values of r) (l--angular momentum, $k^2 = 2mE$, m--mass, E--energy, t--time, g--coupling constant). It is shown that in the vicinity of the point $g = 0$ there is a small region which is free of any singularities of the partial amplitude. This makes it possible to employ the Mittag-Leffler method for an effective calculation of $f_g(l, k)$ and consequently to determine the total amplitude $T_g(k, t)$ for arbitrary values of g with any prescribed degree of accuracy, by using information contained in the coefficients of a finite number of terms of the perturbation-method series for $f_g(l, k)$. Orig. art. has: 3 figures and 29 formulas.

Card 1/2

L 2712-66

ACCESSION NR: AP5017179

0

ASSOCIATION: Uzhgorodskiy gosuniversitet (Uzhgorod State University)

SUBMITTED: 31Oct63 ENCL: 00 SUB CODE: GP

NR REF SOV: 013 OTHER: 012

KC

Card 2/2

LOMSADZE, Yu.M.; KHIMICH, I.V.; SHUBA, I.M.

Structure of the g-plane in relativistic Schrödinger theory.
Ukr. fiz. zhur. 9 no.11:1176-1184 N '64 (MIRA 18:1)

1. Uzhgorodskiy gosudarstvennyy universitet.

ACC NR: AR6035038 SOURCE CODE: UR/0058/66/000/008/B025/B025

AUTHOR: Khimich, I. V.

TITLE: Structure of the g plane of the partial amplitude of the theoretical field

SOURCE: Ref. zh. Fizika, Abs. 8B243

REF SOURCE: Tezisy dokl. k XIX Nauchn. konferentsii. Uzhgorodsk. un-t, 1965. Ser. fiz. Uzhgorod, 1965, 97-104

TOPIC TAGS: potential scattering, field theory, amplitude, partial amplitude

ABSTRACT: The analytical properties of the partial amplitude with respect to the coupling constant g are discussed (In potential scattering, the amplitude with respect to g has only poles or fixed branching points, while in the field theory there are mobile branching points, the position of which depends on the energy and the angular momentum). Ya. Azimov. [Translation of abstract] [NT]

SUB CODE: 20/

Card 1/1

KHIMICH, L.M.; CHISTIK, V.P.

Equipment for welding USF-7.5/30-type filters. Avtom. svar. 16 no.7:76-77 Jl '63. (MIRA 16:8)

1. Zaporozhskiy transformatornyy zavod.

(Filters and filtration)
(Electric welding—Equipment and supplies)

BOROVYY, Ye. M.; KHIMICH, M. G.; ROMANYUK, A. I.

Closed injury of the abdomen with rupture of the head of the pancreas and the common bile duct. Nov. khir. arkh. no.2:67-68 '62.
(MIRA 15:2)

1. Rovenskaya uchastkovaya bol'nitsa i khirurgicheskoye otdeleniye (zav. - Ye. M. Borovyy) Rovenskoy oblastnoy bol'nitsy.

(PANCREAS—WOUNDS AND INJURIES)
(BILE DUCTS—WOUNDS AND INJURIES)

KHIMICH, N.I.; SEREDYUK, I.I.

Standardizing parts and units of furniture. Der. prom. 12 no.3:47 Mr '63. (MIRA 16:5)

1. Upravleniye derevoobrabatyvayushchey i bumazhnoy promyshlennosti L'vovskogo soveta narodnogo khozyaystva (for Khimich). 2. L'vovskiy politekhnicheskiy institut (for Seredyuk).

(Furniture industry)

KHIMICH, N.I.

Work practices of the Lvov furniture firm "Karpaty." Der. prom. 12 no.8:3-5 Ag '63. (MIRA 16:11)

1. Upravleniye derevoobrabatyvayushchey i bumazhnoy promyshlennosti L'vovskogo soveta narodnogo khozyaystva.

KHIMICH, V. (st. Vyselki, Krasnodarskogo kraya).

Prevention of radio interference. Radio no.8:31 Ag '53. (MLRA 6:8)
(Radio--Interference)

KHIMICH, V.F.; VALITOV, V.A.

Hydrogen determination in the process of mud-analysis logging.
Razved. i prom. geofiz. no.47:97-100 '63. (MIRA 16:8)
(Prospecting) (Drilling fluids)

KHIMICH, V.F.

Industrial appraisal of the gas-bearing capacity of rocks according to data of thermal degasification of the core under vacuum. Razved. i prom. geofiz. no.50:100-103 '63. (MIRA 18:3)

NATANSON, E.M.; CHERNOGORENKO, V.B.; KHIMCHENKO, Yu.I.; ANISTRATENKO, G.A.

Interaction of macromolecules of natural rubber and polyisobutylene with colloidal particles of nickel and cobalt at the moment of their deposition on the cathode. Koll.zhur. 27 no.3:412-416 My-Je '65. (MIRA 18:12)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR, Kiyev. Submitted Aug. 2, 1963.

KHIMCHENKO, Yu.I.; UL'BERG, Z.R.; PRIKHOD'KO, G.P.; IVANOVA, Ye.I.;
KABAKCHI, A.M.; MELESHEVICH, A.P.; NATANSON, E.M.

Effect of γ-irradiation on the structure of epoxide resin and metal polymers based on it. Ukr. khim. zhur. 31 no. 11: 1164-1167 '65 (MIRA 19:1)

1. Institut fizicheskoy khimii imeni Pisarzhevskogo AN UkrSSR i Institut obshchey i neorganicheskoy khimii AN UkrSSR.

KHIMICH, Z. YA.

KHIMICH, Z. YA. -- "Proper Utilization of Land on Collective Farms of Kazakhstan--a Task of Great, Nation-wide Importance." *(Dissertations for Degrees in Science and Engineering Defended at USSR Higher Educational Institutions) Min Higher Education USSR, Alma-Ata Veterinary-Zootechnical Inst, Alma-Ata, 1955.

SO: Knizhnaya Letopis' No. 31, 30 July 1955.

*For the Degree of Candidate in Agricultural Sciences.

KHIMICHENKO, A.G. [Khimichenko, A.H.]

Simplified method for determining the moisture content of slips. Leh. prom. no.2:85-86 Ap-Je '63. (MIRA 16:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut stekol'noy i farforo-fayansovoy promyshlennosti.
(Pottery) (Moisture—Measurement)

KOMSKAYA, M.S. [Koms'ka, M.S.], kand. tekhn. nauk; OSOVSKAYA, I.V. [Osovs'ka, I.V.]; KHIMICHENKO, A.G. [Khimichenko, A.H.]; SHKOL'NIK, A.Ya. [Shkol'nyk, H.IA.]

Possibility of using substitutes for Prosyanaya kaolin in the multicomponent composition for porcelain. Leh. prom. no.1:65-67 Ja-Mr '65.

(MIRA 18:4)

KHIMICHENKO, N.V., kand.tekhn.nauk; PRIKHOD'KO, V.N., inzh.; GOZAK, V.P., inzh.

Control of the metal quality of large crankshafts under operational plant conditions. Trudy NIIKHIMMASH no.34:137-143 '60.
(MIRA 14:1)

(Metals—Testing) (Ultrasonic testing)

TROFIMOV, P.K.; ISANGULOV, I.M.; KHIMICHEV, G.F.; LEBEDEV, S.G., red.; BABAKHANOV, A., tekhn. red.

[Let's increase the production of pork] Uvelichim proizvodstvo svininy; iz opyta raboty svinovodov sovkhozov "Udarnik" Samarkandskoi oblasti i "Khazarbag" Surkhandar'inskoi oblasti. Tashkent, Gosizdat UzSSR, 1963. 27 p. (MIRA 17:1)

KHIMICHEV, Ye.A.

Increasing the efficiency of the equipment used for hardening caterpillar link pins. Avt. trakt. prom. no.6:25 Je '55. (MIRA 8:9)

1. Voroshilovgradskiy zavod imeni 20 let Oktyabrya
(Steel--Hardening)

TEYF, A.Z.; KHIMICHEVA, Z.I.

Progressive method for the calculation of production costs. Der. prom. 13 no.4:12-14 Ap '64. (MIRA 17:4)

KHIMIDA, Ibragim Kh.

Geology of the Libyan Desert (United Arab Republic). Izv. vys. ucheb. zav.; geol. i razv. 6 no.9:29-39 S '63. (MIRA 17:10)

1. Moskovskiy geologorazvedochnyy institut im. S.O. Ordzhonikidze.

MARCHENKO, G.M.; BUDNAYA, M.V.; KHIMINA, Ye.F.; KIYASHKO, A.A.

Characteristics of glandular secretion in the abomasum of milk-fed and suckling calves. Fiziol. zhur. 50 no.5:613-617 My '64.

(MIRA 18:2)

1. Kafedra fiziologii sel'skokhozyaystvennykh zhivotnykh Kubanskogo sel'skokhozyaystvennogo instituta, Krasnodar.

SERYY, V.V.; KHIMITSA, V.A.

Hydrology and hydrochemistry of the Gulf of Aden and the Arabian Sea. Okeanologiia 3 no.6:994-1003 '63. (MIRA 17:4)

1. Azovo-Chernomorskiy nauchno-issledovatel'skiy institut morskogo rybnogo khozyaystva i okeanografii.

YAKHNINA, N.A.; KHIMITSKAYA, T.A.; SHATROV, I.I.

Experimental study of colienteritis. Zhur. mikrobiol. epid i immun. 31 no.6:77081 Je '60. (MIRA 13:8)

1. Iz Instituta epidemiologii i mikrobiologii im. Gamalei AMN SSSR i Instituta pediatrii AMN SSSR.

(ESCHERICHIA COLI)

KHIMITSKIY, K.F.

KHIMITSKIY, K.F.

New data on the effectiveness of rotating sieves of water intakes. Vod.i san.tekh. no.9:20-24 S '57. (MIRA 10:11)

(Water--Purification)

KHIMITSKIY, K.F., inzh.

Concerning A.R. Berezinskii's formulas for determining discharge
and resistance coefficients in designing water-intake openings.
Elek.sta. 29 90-91 Je '58. (MIRA 11:9)
(Hydraulics)

KHIMITSKIY, K.F.

Durability of plywood ducts for the transportation of tailings.
TSvet. met. 33 no.7:5-7 Jl '60. (MIRA 13:7)
(Ore dressing--Equipment and supplies) (Pipe, Wooden)

KHIMITSKIY, K.F.

Protection of plywood tailing ducts against wear at joints. TSvet. met. 33 no.9:32-36 S '60. (MIRA 13:10)
(Pipe, Wooden) (Protective coatings)

88239
S/096/61/000/003/011/012
E194/E155

26.2161

AUTHOR: Khimitskiy, K.F., Engineer

TITLE: Formulae for the Constriction Factor of Jets

PERIODICAL: Teploenergetika, 1961, 8 No. 3, pp. 70-74

TEXT: Numerous formulae that have been proposed to determine the constriction of a jet leaving an orifice are reviwed. The older formulae are so complicated as to be practically unusable, though some of the more recent formulae are simpler. Comparative calculations made by the various formulae show that it is difficult to pick any one of them which is convenient for use in making calculations on apertures with various inlet conditions, and in particular with various shapes of inlet to the aperture, whether square or rounded. In studying apertures with rounded inlets a new and much simpler expression was obtained for the constriction factor:

$$\varepsilon = \frac{1}{1 + \sqrt{k(1 - \eta)^2}} \qquad (20)$$

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88239

S/096/61/000/003/011/012
E194/E155

Formulae for the Constriction Factor of Jets

The inlet resistance = $k(1 - \eta)^2$. When the inlet edge is square, k = 0.4, and when it is rounded k may be calculated. Results obtained by the new and the old formulae are compared, and the new one is recommended for use both when the jet discharges to atmosphere and when it is submerged in liquid.
There are 4 figures and 15 references: 14 Soviet and 1 German.

ASSOCIATION: VNII VODGEO

Card 2/2

KHIMITSKIY, K.F., kand.tekhn.nauk

Characteristics of currents in screen chambers of water intakes with frontal delivery of water to the screens. Vod. i san. tekh. no.1:3-7 Ja '63. (MIRA 16:2)
(Intakes (Hydraulic engineering))

KHIMITSKIY, K.F., kand. tekhn. nauk

Effect of the speed of rotation of water purification networks on their hydraulic resistance. Vod. i san. tekh. no.12: 22-24 D '64 (MIRA 18:2)

KHIMITSKIY, K.F., kand.tekhn.nauk

A new water purification filter. Vod. i san. tekh. no.8:31-33 Ag '65. (MIRA 18:12)

KhIMShIAShVILI, L. D., Cand Med Sci — (diss) "Date concerning the metabolism of certain substances in the organism during toxicosis in the second half of pregnancy," Tbilisi, 1960, 30 pp (Tbilisi State Medical Institute) (KL, 33-60,147)

KHIMSHIASHVILI N.G

898. ხიმშიაშვილი ნიკოლოზ გიორგის ძე. ზემო რაჭის ზედა იურული ნალექების ფაუნა და სტრატიგრაფია. 1949. 270 გვ., ილ., [4] ჩ. ფ., გარტ. რუკა. [13 ტაბ.].
დაცვა 1949, 4.3.

Химшиашвили Николай Георгиевич. Фауна и стратиграфия верхнеюрских осадков Верхней Рачи. 1949. 270 с., илл. [4] вкл. л., кар. [13 тбл.].
Защ. 1949, 4.3.

899. ჯანელიძე ოლღა ისაკის ასული. საქართველოს მიოცენური ფორამინიფერები. 1948. 156, 3 გვ. [16] ჩ. ფ., რუკა, ტაბ., სქ. (სოხუმის პედ. ინსტ.)
დაცვა 1949, 25.2.

Джанелидзе Ольга Исааковна. Миоценовые фораминиферы Грузии. 1948. 156, 3 с. [16] вкл. л., кар., тбл., сх. (Сухумский пед. инст.).
Защ. 1949, 25.2.

* * *

900. Ахмедли Муртаз Косум Оглы. К изучению вопроса наличия германия в твердых углеводородах нефти. Баку. 1939. 104 с., илл.
Защ. 1939, 29.6.

901. Безиршвили Елена Константиновна. Минералогия ртутных месторождений Грузии. (Горная Рача, Абхазия). 1948. 100 с., фото., тбл. (Инст. геол. и минерал. АН Груз. ССР).
Защ. 1948, 24.5.

902. Волынский Игорь Сергеевич. Определение рудных минералов в полированных шлифах по физическим свойствам. 1940. Ч. 1 Руководство. 111 с., с фиг. Ч. 2. Определитель. [86] тбл.
Защ. 1943, 4.6.

903. Гвахария Георгий Владимирович. Минералогия поствулканических процессов окрестностей г. Тбилиси. (Согалаугское месторождение). 1939 [2], 108 с., фотоилл., 8 вкл. л. (Цеолиты Грузии. Монография № 2, 1952).
Защ. 1939, 17.6.

904. Казахашвили Тамара Григорьевна. Храмский кристаллический массив. Б. г. 110 с., фотоилл. (Геол.-геогр. очерк).
Защ. 1939, 17.6.

905. Кебуладзе Варлам Васильевич. Применение метода сопротивлений к разведке баритовых жильных месторождений. 1938. 120 с.
Защ. 1938, 17.4

906. Киласония Пиера Федоровна. Петрографическое строение Юго-Восточной части дзирульского кристаллического массива. (Бассейн р. Черет Хеви). 1940. 123 с., илл., карт. тбл. (Тр. Инст. геол., т. 2, 1950. геол. петр. серия).
Защ. 1940, 3.12.

907. Кузнецова Елизавета Владимировна. Основные процессы минерогенеза, связанные с древней гранитной интрузией Балкарии. 1942. 145 с. [6] вкл. л., илл. (Акад. наук СССР, Кавк. экспед. Инст. геол. наук).
Защ 1942, 25.7.

908. Татришвили Нина Фоминична. К петрографии южного склона главного Кавказского хребта в пределах Верхней Рачи. 1939. 89 с. (Тр. груз. гос. геол. управл. в. 5).
Защ. 1939, 17.6.

909. Тавурия Павел Александрович. К петрографии Рквийского интрузива порфировидного гранита из дзирульского массива. 1938. 478 с. (Бюлл. геол. инст., т. 3, 1938).
Защ. 1938, 15.4.

910. Узнадзе Медея Димитриевна. Третичная флора Западного Казахстана и ее отношение к палеогеновой европейской флоре. 1941. 259, [4] с., [14] вкл. л., тбл. (Тр. Инст. геол. 1941, т. 4 (9) 1,2).
Защ. 1941, 30.6.

Dissertation for degree of
Candidate Geological Sciences

Def. at
Tbilisi State U.

KHIMSHIASHVILI, N.G.

Callovian deposits of Rachi in Southern Ossetia. Soob.AN Gruz.SSR
16 no.8:621-625 '55. (MLRA 9:5)

1. Akademiya nauk Gruzinskoy SSR, Sektor paleobiologii, Tbilisi.
Predstavleno deystvitel'nym chlenom Akademii L.Sh. Davitashvili.
(Ossetia--Geology, Stratigraphic)

KHIMSHIASHVILI, N. G.

15-57-5-5819

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5, p 15 (USSR)

AUTHORS: Davitashvili, L. Sh., Khimshiashvili, N. G.

TITLE: The History of the Term "Paleontology" and Some Other Scientific Names for Organisms From the Geologic Past (K istorii termina "paleontologiya" i nekotorykh drugikh nazvaniy nauki ob organizmakh proshlykh geologicheskikh vremen)

PERIODICAL: Vopr. istorii yestestvozn. i tekhniki, 1956, Nr 2, pp 176-181.

ABSTRACT: Until recently the opinion was held that the term "paleontology" was proposed almost simultaneously by the Russian scientist Fischer Von Waldheim (Fisher fon Val'dgeym) and by the French scientists Blenville (Blenvil'). The authors have established the fact that the term "paleontology" was first introduced by Blenville in 1825 in his book "Handbook on Malacology and Conchology." It is proposed that the term "paleo-

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The History of the Term "Paleontology" (Cont.)

biology" be used as the equivalent of "evolutionary paleontology" in the sense given to it by A. P. Pavlov ["Polveka v istorii nauki ob iskopaemykh organismakh" (A Half Century in the History of the Science of Fossils), Moscow, 1897].

Card 2/2 G. I. D.

KHIMSHIASHVILI, N.G.

[Upper Jurassic fauna of Georgia] Verkhneiurskaia fauna Gruzii (Cephalopoda i Lamellibranchiata) Tbilisi, Akad. nauk Gruzinskoi SSR, 1957. 312 p. (MIRA 11:6)
(Georgia--Mollusks, Fossil)

KHIMSHIASHVILI, N. G.: Doc Geolog-Mineralo Sci (diss) -- "Late-Jurassic mollusks of Georgia and their stratigraphic significance". Leningrad, 1958. 27 pp (Min Geology and Protection of Natural Resources USSR, All-Union Sci Res Geology Inst VSEGEI), 150 copies (KL, No 4, 1959, 122)

KHIMSHIASHVILI, N.G.

Relationship between the upper Jurassic mollusk faunas of Georgia and the Northern Caucasus. Trudy Inst. paleobiol. AN Gruz. SSR no.6:123-212 '61. (MIRA 15:3)

(Georgia--Paleontology, Stratigraphic)
(Caucasus, Northern--Paleontology, Stratigraphic)

(

SOV/19-59-8-203/339

AUTHORS: Isayev, A.A., Mikhaylov, I.G., Khimunin, A.S.

TITLE: An Ultrasonic Interferometer

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 8, p 41 (USSR)

ABSTRACT: Class 42g, 1_{01}. Nr 119358 (596080 of 31 Mar 1958). Dependent on Author's Certificate Nr 118669. This interferometer is for measuring the speed of ultrasound in liquid, with a generator of highly stable ultra-sonic vibrations in the liquid media; to increase the sensitivity of the device and simplify its design, a generator as described in Author's Certificate Nr 118669 is used as a sensitive element for the acoustic resistance of the medium which varies under the influence of the standing waves.

Card 1/1

S/887/61/000/000/009/069
E073/E155

AUTHORS: Isayev, A.A., and Khimunin, A.S.

TITLE: Oscillator for generating highly stable ultrasonic oscillations in liquid media.
(A.c. no.118669, cl. 42s (no. 595851 of March 29, 1958))

SOURCE: Sbornik izobreteniy; ul'trazvuk i yego primeneniye. Kom. po delam izobr. i otkrytiy. Moscow, Tsentr. byuro tekhn. inform., 1961, 18

TEXT: Known equipment for generating high stability ultrasonic oscillations in liquid media is relatively complex. To simplify the design, an ultrasonic oscillator is proposed based on the principle of a quartz stabilised oscillator circuit. In this circuit (Fig.13) the emitting and stabilizing piezo-quartz wafers are connected in parallel and are connected between the control grid and the cathode of the oscillator tube. The emitting piezo-quartz, which emits ultrasonic oscillations into the liquid, has a considerably higher resistance than the stabilizing piezo-quartz, since this is placed in a medium of low resistance (air). As a result, the emitting piezo-quartz only slightly shunts the

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Oscillator for generating highly ... S/887/61/000/000/009/069
E073/E155

stabilizing circuit, thus ensuring a high Q-factor and stable frequency. Since the acoustic power of the proposed ultrasonic oscillator is not high (due to the low voltage in the grid circuit of the oscillating tube) its applications are limited to fields of metering acoustics.

There is 1 figure.

[Abstractor's note: Complete translation.]

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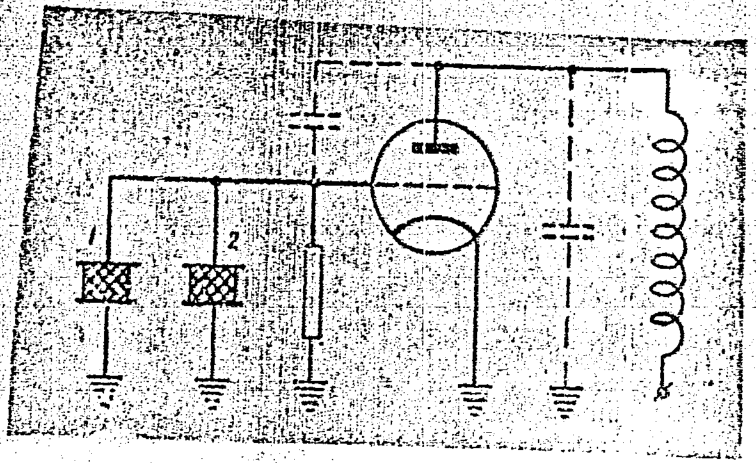
Oscillator for generating highly ... S/887/61/000/000/009/069
E073/E155

Fig.13. Diagram of a high stability ultrasonic oscillator.
1 - emitting piezo-quartz; 2 - stabilizing piezo-quartz.



Card 3/3

S/019/62/000/003/047/085
A154/A126

AUTHORS: Khimunin, A. S., Isayev, A. A.

TITLE: A method of measuring the speed of sound in solid thin specimens

PERIODICAL: Byulleten' izobreteniy, no. 3, 1962, 37

TEXT: Class 42g, 1_{01}. No. 144619 (692318/26-10 of January 5, 1961). The method of electroacoustic feedback with preliminary acoustic delay of the signal passing through the specimen is used for measuring the speed of sound in solid thin samples.

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37883

S/019/62/000/008/074/121
A154/A126

26.2190

AUTHOR: Khimunin, A. S.

TITLE: A method of determining gravimetric liquid by supersonic means

PERIODICAL: Byulleten' izobreteniy, no. 8, 1962, 56

TEXT: Class 42e, 19. No. 146517 (741354/26-10 of August 8, 1961). A method of determining gravimetric liquid consumption by supersonic means is based on the measurement of phase correlations. It entails the placement of vibrators along and against the measured liquid flow. It differs from others in that, to eliminate interferences arising during measurements of the phases, also to compensate the dependence of readings on the square of supersound propagation rate, and to make it possible to measure a very small liquid consumption, an ultrasonic signal is radiated in one acoustic channel along and against the liquid flow, by making generator and amplifiers operate during the measurement in periods. The specific acoustic resistance of the liquid is measured using the operational frequencies of such flowmeter. The damping of the vibrators is done in such a way that the obtainment of a desired front steepness of voltage

Card 1/2

build-up in the vibrators is ensured to obtain a desired accuracy in determining the propagation rate of supersonic vibrations between the vibrators.

24.1200

S/019/62/000/008/108/121
A154/A126

AUTHOR: Khimunin, A.S.

TITLE: A device for measuring specific acoustic resistances of liquids

PERIODICAL: Byulleten' izobreteniy, no. 8, 1962, 75

TEXT: Class 42s. No. 146617 (741353/26-10 of August 8, 1961). A device for measuring specific acoustic resistances of liquids contains a current generator feeding a piezoquartz radiator and an indicator. It differs from others in that in order to obtain linear dependence between the specific acoustic resistance of the liquid and the voltage on the piezoquartz radiator, the current generator is enveloped by a positive voltage feedback.

B

Card 1/1

SOV/46-4-4-12/20

AUTHORS: Isayev, A.A., Mikhaylov, I.G. and Khimunin, A.S.

TITLE: On a Modification of an Ultrasonic Interferometer (Ob odnom vidoizmenenii skhemy ul'trazvukovogo interferometra)

PERIODICAL: Akusticheskiy Zhurnal, 1958, Vol 4, Nr 4, pp 363-364 (USSR)

ABSTRACT: When a quartz plate is used both as a generator and as a stabilizing element in a Cady--Pearson interferometer the ultrasonic frequency is strongly affected by the reciprocal action of ultrasound on the quarts plate. Moreover the Cady--Pearson interferometer cannot be used in liquids because of strong attenuation. The authors describe a simple interferometer which can be used in liquids and which is free of these troubles. The circuit of the interferometer generator is shown in Fig 1. Quartz Q_1 is the radiator while quartz Q_2 is the stabilizing element. Negative feedback is obtained via the inter-electrode capacitance of the triode used (see Fig 1). The equivalent circuit of the grid part of the generator is shown in Fig 2: C_0 is the capacitance of both quartz plates; L_2, C_2 and R_2 are the equivalent parameters of the stabilizing quartz Q_2; L_1 is the equivalent inductance corresponding to the vibrating mass of the quartz Q_1; L_g corresponds to the vibrating mass of the medium; C_1 represents

Card 1/2

On a Modification of an Ultrasonic Interferometer SOV/46-4-4-12/20

the elasticity of the radiating quartz; r_k and $r_з$ are the loss and radiation resistance respectively. The generator described has high stability at all positions of the interferometer reflector; this stability is not less than that of the standard heterodyne wavemeter. The interferometer is also very sensitive: at 1 Mc/s it is possible to measure the sound velocity in castor oil at distances of 15-20 cm between the radiating quartz and the reflector. A d.c. amplifier with a pointer instrument was used as an indicator. The whole apparatus contains only one valve of the "button" type, which is a double triode. There are 2 figures.

ASSOCIATION: Leningradskiy gosudarstvenyy universitet (Leningrad State University)

SUBMITTED: April 15, 1958

Card 2/2

S/081/62/000/002/046/107
B156/B101

AUTHOR: Khimunin, A. S.

TITLE: Ultrasonic flow gauges

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 319, abstract 2I111 (Sb. "Teploenerg. i khimikotekhnol. pribory i regulyatory". M.-L., Mashgiz., 1961, 104 - 114)

TEXT: The working principles of two categories of ultrasonic flow gauge are described: 1) instruments utilizing the phase relationships between acoustic vibrations transmitted into the flow being investigated and leaving it (the phase method); 2) instruments utilizing temporary relationships between vibrations in the direction of the flow and against it (the time-impulse method). Block diagrams of instruments developed by foreign firms and Soviet organizations (NIITeplopribor and KB Tsvetmetavtomatika) are examined. Brief technical particulars, and the fields in which the instruments are employed, are given. [Abstracter's note: Complete translation.]

Card 1/1

S/194/62/000/004/061/105
D295/D308

AUTHORS: Isayev, A. A. and Khimunin, A. S.

TITLE: The measurement of sound velocity in thin plates

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 4, 1962, abstract 4-5-36kh (V sb. Prom. primeneniye ul'trazvuka. Kuybyshevsk. aviats. in-t, Kuybyshev, 1961, 161-166)

TEXT: An apparatus is described for the measurement of the velocity of propagation of longitudinal and transverse ultrasonic waves in slabs of minimum thickness ~1 mm. A ring-type starter method, with preliminary retardation of the signal passing through the sample, is used in the apparatus. The mode of operation is pulsed. The apparatus operates as follows: A pulse generator feeds an acoustical transducer, which radiates short ultrasonic pulses, into a delay line, at whose opposite end is a sound receiver. The signal from the sound receiver is used for the next starting of the pulse generator. Thus the pulse repetition frequency is determined by the

Card 1/2

The measurement of sound ...

S/194/62/000/004/061/105
D295/D308

time of acoustic delay of the signal. If the slab investigated is placed between the delay line and the sound receiver, the delay time of the signal increases and the pulse repetition frequency decreases. A simple calculation enables one to determine the sound velocity in the object investigated from the values of the pulse repetition frequency and the thickness of the object investigated. A diagram of the installation is given. /Abstracter's note: Complete translation./

✓

Card 2/2

S/194/62/000/004/059/105
D295/D308

AUTHORS: Isayev, A. A., Nikhaylov, I. G. and Khimunin, A. S.

TITLE: A new ultrasonic interferometer circuit

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 4, 1962, abstract 4-5-34m (V sb. Prom. primeneniye ul'trazvuka. Kuybyshevsk. aviats. in-t. Kuybyshev, 1961, 167-173)

TEXT: The circuit of an ultrasonic interferometer is described, which makes it possible to measure sound velocity to a sufficiently high degree of accuracy (0.01 - 0.02%) and to avoid the use of buffer stages and high-stability d,c. voltage sources in the electronic generator. As a result, the circuit of the generator is considerably simplified and the number of valves reduced. The generator is assembled on one half of the 6Н15П (6N15P) twin triode with capacitive feedback and with an oscillatory circuit in the grid circuit. The oscillatory circuit consists of a stabilized piezoelectric crystal and a quartz radiator connected in parallel to it. The

Card 1/2

A new ultrasonic ...

S/194/62/000/004/059/105
D295/D308

radiator diameter is 20 mm and the radiation passes into the liquid through a wavelength thickness brass plate. At a frequency of 1.00015 Mc/s instability of the circuit amounted to 5×10^{-6} for all distances between radiator and reflector. Standing-wave maxima are recorded on the basis of the variation of the voltage across the radiator, which is equal to 15 - 20 V when the distance between radiator and reflector is 10 cm, and which increases with distance. For recording the maxima, the second half of the triode is used, in the anode circuit of which is connected a 15 mA milliammeter together with a relay enabling the number of peaks to be counted by means of a МЭС-54 (MES-54) pulse counter. The circuit is fed from an ordinary rectifier with an L-filter, after which a stabilovolt is connected. 2 figures. /_Abstracter's note: Complete translation._7

Card 2/2

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24.1700
11.3900

S/054/62/000/004/002/017
B101/B186

AUTHORS: Gitis, M. B., Mikhaylov, I. G., Khimunin, A. S.

TITLE: Apparatus for measuring the sonic velocity in liquid metals and melts

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 4, 1962, 52-55

TEXT: An apparatus working on the principle of electroacoustic feedback, able to measure ultrasonic velocity with the transducers in fixed positions is described here. Instead of the ultrasonic propagation velocity, the pulse repetition frequency is measured, i.e. the ultra-sound which has passed the test medium, is amplified, shaped, and again starts up the master pulse generator. The ultrasonic velocity is determined by $c=d/(1/f + \tau_\Sigma)$, where d is the distance between the vibrators, f the pulse repetition frequency, τ_Σ the total electric and acoustic delay. To allow operation over a wide range of temperature the measuring cell has two delay rods. To eliminate the effect of the temperature gradient occurring in the delay rods,

Card 1/2

Apparatus for measuring the...

S/054/62/000/004/002/017
B101/B186

the ultrasonic propagation velocity is measured not only passing through the system but also in the reflection from the rod-fusion interfaces. $c = 2dff_1f_2/(2f_1f_2 - ff_1 - ff_2)$, where f_1 and f_2 is the pulse repetition frequency in the two rods. The distance d is calibrated by a liquid of known sound conductivity. The pulse generator delivers negative pulses of 3 μsec duration, 150 v amplitude, starting up a shock generator. Measurements are made with the precisely fixed frequency of 5 Mc/sec. The delay rods consist of fine-grained 1Х18Н9Т (1Kh18N9T) steel. A check of the ultrasonic velocity in mercury between -39.2 and +70°C showed good agreement with the data found by O. J. Kleppa (Ultrasonic velocities of sound in some liquid metals. Adiabatic and isothermal compressibilities of liquid metals at their melting points. Journ. Chem. Phys., 18, 1331, 1950) and E. B. Freyer, J. C. Hubbard, D. W. Andrews (Sonic studies of the physical properties of liquids. Journ. Amer. Chem. Soc., 51, 759, 1929). There are 1 figure and 1 table.

SUBMITTED: May 22, 1962

Card 2/2

ISAYEV, A.A.; KHIMUNIN, A.S.

Ultrasonic densitometer. Akust.zhur. 8 no.3:308-313 '62. (MIRA 15:11)

1. Leningradskiy gosudarstvennyy universitet.
(Ultrasonics) (Densitometer)

L 16180-63 EWT(1)/BDS AFFTC/ASD

ACCESSION NR: AR3005184 S/0058/63/000/006/H056/H05

54

SOURCE: RZh. Fizika, Abs. 6 Zh353

AUTHORS: Gitis, M. B.; Mikhaylov, I. G.; Khimunin, A. S.

TITLE: Installations for the measurement of the velocity of sound in liquid metals and melts

CITED SOURCE: Vestn. Leningradskogo un-ta, no. 22, 1962, 52-55.

TOPIC TAGS: ultrasonics, sound velocity, liquid metal, melt, measurement

TRANSLATION: The method of electroacoustic feedback is used in the described installation. An ultrasound pulse that has passed through the investigated medium is amplified, shaped, and again triggers the master oscillator. The method makes it possible to carry out the measurements at a fixed position of the converters. The measurement of the time of propagation of the ultrasound in the medium is replaced by the measurement of the repetition frequency of the pulses. To operate over a wide range of frequencies, the measuring cuvette of the apparatus has two delay rods of 1Kh18N9T stainless steel. Measurement of the time of propagation

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L 16180-63

ACCESSION NR: AR3005184

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of the ultrasound pulse has been carried out not only in the rod--melt system, but also separately in each of the rods, so as to exclude the influence of the delay rods. The measurement procedure was verified on mercury in the temperature range from -39.2 to + 70°C. To determine the acoustical path in the investigated liquid, the installation was calibrated beforehand using a liquid with known sound velocity. The liquid employed was butyl iodide, in which the sound velocity was measured with an ultrasonic interferometer at 20° C. The converters were excited with radio pulses of 3 millisecond duration with a carrier frequency of 5 Mcs. The pulse repetition frequency was measured with a heterodyne wavemeter. The relative error in the measurement of the sound velocity is 0.2--0.3%. The measurement accuracy can be increased by using electronic pulse counters. A. Kon'kov.

DATE ACQ: 15Jul63 SUB CODE: PH, SD ENCL: 00

Card 2/2

KHIMUNIN, S. D.

Khimunin, S. D. "Experience in the construction of concrete-frame partitions", Sbornik trudov (Ukr. nauch.-issled. in-t sooruzheniy), Kiev, 1948, p. 3-8.

SO: U-3261, 10 April 53, (Letopis 'Zhurnal 'nykh Statey, no. 11, 1949).

[illegible]

SHARASHKIN,Ye.; KHIMUNIN,S.

Trends in major repairing of apartment buildings and ways of mechanizing it. Zhil.-kom.khoz.5 no.5:3-8 '55. (MLRA 8:11)

1. Glavnyy inzhener Zhilishchnogo upravleniya ispolkoma Leningradskogo gorsoveta (for Sharashkin)
(Apartment houses--Maintenance and repair)

KHIMUNIN, S.D., Cand Tech Sci--(diss) "~~Ways~~ Methods of industrialization of the capital repair ~~general overhauling~~ of stone dwellings." Len, 1958. 20 pp (Min of Higher Education USSR. Len Order of Labor Red Banner Construction Engineering Inst), 150 copies. List of author's works at end of text (13 titles) (KL,49-58, 125)

KHIMUNIN, S.D., kand.tekhn.nauk; PORADNYA, A.I., doktor tekhn.nauk, nauchnyy red.; VOROB'YEV, G.S., red.izd-va; GURDZHIYEVA, A.M., tekhn.red.

[Using industrial methods in making major repairs in apartment houses] Industrial'nye metody kapital'nogo remonta zhilykh domov. Leningrad, Ob-vo po rasprostraneniiu polit. i nauchn.znanii RSFSR, 1959. 38 p. (MIRA 12:8)

(Apartment houses--Maintenance and repair)

(Precast concrete construction)

DUMASHOV, Yu.F., inzh., red.; IVANOV, I.T., kand. tekhn. nauk; MARCHENKO, V.T., inzh.; POLYAKOV, Ye.V., kand. tekhn nauk, dotsent; KHIMUNIN, S.D., kand. tekhn. nauk; ZAMYSHLYEYEVA, I.M., red. izd-va; NAZAROVA, A.S., tekhn. red.

[Standards and norms for the maintenance of residential buildings] Pravila i normy tekhnicheskoi ekspluatatsii zhilishchnogo fonda. Moskva, 1961. 183 p. (MIRA 14:7)

1. Russia (1917- R.S.F.S.R.) Ministerstvo kommunal'nogo khozyaystva . 2.Glavnyy inzhener Upravleniya zhilishchnogo khozyaystva Ministerstva kommunal'nogo khozyaystva RSFSR (for Dumashov). 3. Direktor Akademii kommunal'nogo khozyaystva im. K.D.Pamfilova (for Ivanov). 4. Glavnyy inzhener Zhilishchnogo upravleniya ispolkoma Mossoveta (for Marchenko). 5. Moskovskiy inzhenerno-stroitel'nyy institut im. V.V.Kuybysheva (for Polyakov). 6. Zaveduyushchiy laboratoriyey kapital'nogo remonta zhilykh domov Leningradskogo nauchno-issledovatel'skogo instituta Akademii kommunal'nogo khozyaystva (for Khimunin)

(Dwellings—Maintenance and repair)

BESPALOV, I.V., inzh.; VOLKOV, A.G., inzh.; PEYSIN, D.M., inzh.; PORADNYA, A.I., doktor tekhn. nauk, prof., retsenzent; KHIMUNIN, S.D., kand. tekhn. nauk, naychnyy red.; REYZ, M.B., red. izd-va; PUL'KINA, Ye.A., tekhn. red.

[Quality control of building operations] Kontrol' kachestva stroitel'nykh rabot. Leningrad, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 205 p. (MIRA 14:8)
(Construction industry—Quality control)

ARKHREMOVICH, M.B., kand. biol. nauk; IKONEN, Ye.V., nauchnyy sotr.; SEREBROVA, I.G., nauchnyy sotr.; KHIMUNIN, S.D., kand. tekhn. nauk; BAKHTIYAROVA, R.Kh., red. izd-va; KHENOKH, F.M., tekhn. red.

[Regulations for the protection of wood from decay and damage by wood-destroying insects during major repairs of residential buildings]Pravila zashchity drevesiny ot gnieniia i povrezhdeniia derevorazrushaiushchimi nasekomymi pri kapital'nom remonte zhilykh domov. Moskva, Izd-vo M-va kommun. khoz. RSFSR, 1962. 51 p. (MIRA 15:10)

1. Akademiya kommunal'nogo khozyaystva. Leningradskiy nauchno-issledovatel'skiy institut. 2. Laboratoriya zashchity derevyannykh konstruktsiy Leningradskogo nauchno-issledovatel'skogo instituta Akademii kommunal'nogo khozyaystva (for Ikonen, Serebrova, Akhremovich).
(Wood—Preservation) (Dwellings—Maintenance and repair)

KHIMUNIN, S.D.

Greater improvement of apartment houses and blocks of old building developments of Leningrad. Nauch. trudy AKKH no. 18: 106-129 '62. (MIRA 17:7)

POLYAKOV, Ye.V., dots., kand. tekhn. nauk; BORODIN, I.V., prof., doktor tekhn. nauk, retsenzent; RUFEL', N.A., prof., retsenzent; KHIMUNIN, S.D., kand. tekhn. nauk, retsenzent; DUMASHOV, Yu.F., inzh., retsenzent; IVANOV, I.T., kand. tekhn. nauk, nauchn. red.; ISEYEVA, R.Kh., red.

[Reconstruction and repair of apartment houses] Rekonstruktsiia i remont zhilykh zdanii. Moskva, Stroiizdat, 1964. 200 p. (MIRA 17:12)

KHIMUNIN, S.D., kand. tekhn. nauk; SHARLYGINA, K.A., ml. nauchn. sotr.; VOLCHKOVA, A.T., st. inzh.; Prinimali uchastiye: POPOVA, N.V., inzh.; BYCHKOVA, A.A., inzh.; SKARBOVICHUK, T.G., inzh.; VIYRA, I.I., arkhitektor; SHEYNA, T.M., st. tekhnik

[Recommendations on redesigning and improving the living conditions of apartment houses of old towns] Rekomendatsii po pereplanirovke i povysheniiu blagoustroistva zhilykh domov staroi zastroiki gorodov. Leningrad, Stroiizdat, 1965. 131 p. (MIRA 18:8)

1. Akademiya kommunal'nogo khozyaystva. Leningradskiy nauchno-issledovatel'skiy institut. 2. Rukovoditel' laboratorii kapital'nogo remonta zhilykh domov Leningradskogo nauchno-issledovatel'skogo instituta Akademii kommunal'nogo khozyaystva im. K.D.Pamfilova (for Khimunin).

KHIMUNIN, S.D.; VOL'FSON, V.L.

Technology of assembling prefabricated flooring from single-hollow reinforced concrete floor boards. Nauch. trudy AKKH no.31:172-178 '64. (MIRA 18:9)

KHIMUNIN, S.D., kand. tekhn. nauk red.

[Instructions in the technology of production and technological charts for the operations in the capital repair of stone residential buildings] Ukazaniia po tekhnologii proizvodstva i tekhnologicheskie karty na raboty pri kapital'nom remonte kamennykh zhilykh domov. Moskva, Stroiizdat, 1965. 356 p. (MIRA 19:1)

1. Akademiya kommunal'nogo khozyaystva. Leningradskiy nauchno-issledovatel'skiy institut.

KHIMUSHIN, F. F.

"Alloys used in gas turbines in the USSR."

report presented at the Symp on Heat-Resistant Metallic Materials, Prague, 3-5 Sep 64.

1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

Cr

9

COMMON ELEMENTS

Welding acid-resisting steels used in chemical engineering. F. F. Khimushin. *Khim. Mashinostroenie* 1935, No. 1, 20-8.—A review. S. L. Madorsky

COMMON VARIABLES INDEX

OPEN

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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3RD AND 4TH ORDERS

AUTHOR INDEX

1ST AND 2ND LETTER

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Cr

9

Rust-free chromium-manganese-nickel steels of austenite and austenite-ferrite character. F. F. Khimushin. *Kachestvennaya Stal* 1935, No. 1, 7-18; *Chem. Zentr.* 1936, I, 150; cf. *C. A.* 31, 4632. Non-rusting steels having up to 0.4% C, 11-20% Cr, 3-10% Mn and 0-6% Ni were investigated. Mech. and phys. properties of the steels in the heat treated and the cold-rolled conditions were detd. and the effects of the Ni and C contents upon the formation of an austenite and austenite-ferrite structure when the steel is quenched in water from 1150° reported. The cold-rolled steel can be very satisfactorily welded by the elec. spot-welding process and possesses a marked resistance to corrosion by the atm. or sea water.

M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ca

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PROCESSES AND PROPERTIES INDEX

Stainless and acid-resisting steels for chemical engineering. F. F. Khimushin and M. F. Denisov. *Khim. Mashinostroenie* 1935, No. 4, 24-6.—Samples of Cr-, Cr-Ni-, Cr-Ni-Mo-, Cr-Ni-Mo-Cu- and Mn-Cr-Ni- steel were kept for 100 hrs. at 18-23° in the following solns.: H_2SO_4 and HCl of various concns., 23% H_3PO_4, 10% $(COOH)_2$, 42% AcOH; also, for 10 hrs., in 50% KOH at room temp. and in boiling HNO_3 (d. 1.4 and 1.52). Compns. of the most resistant steels were as follows: in concd. HCl, 0.15 C, 0.70 Si, 0.61 Mn, 13.7 Cr, 0.20 Ni (I) and 0.29 C, 0.33 Si, 7.30 Mn, 16.7 Cr, 4.30 Ni (II). In 18% HCl, 0.14 C, 0.34 Si, 0.36 Mn, 10.25 Cr, 9.6 Ni (III) and 0.24 C, 0.50 Si, 0.58 Mn, 18.2 Cr, 7.8 Ni (IV). In 23% H_3PO_4, (III) and 9.18 C, 0.95 Si, 0.60 Mn, 19.3 Cr, 10.2 Ni, 0.12 Ti (V). In 10% $(COOH)_2$, 0.12 C, 0.10 Si, 0.20 Mn, 17.4 Cr, 14.9 Ni, 2.35 Mo, 2.46 Cu (VI) and (IV). In 42% AcOH, 1.10 C, 1.30 Si, 1.20 Mn, 19.8 Cr, 8.02 Ni, 0.75 Ti (VII) and 0.20 C, 0.12 Si, 7.73 Mn, 17.5 Cr, 3.04 Ni (VIII). In 50% KOH, (IV) and (V). In boiling HNO_3, 0.17 C, 3.00 Si, 0.50 Mn, 17.7 Cr, 9.8 Ni (IX), (II) and (VIII).

S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

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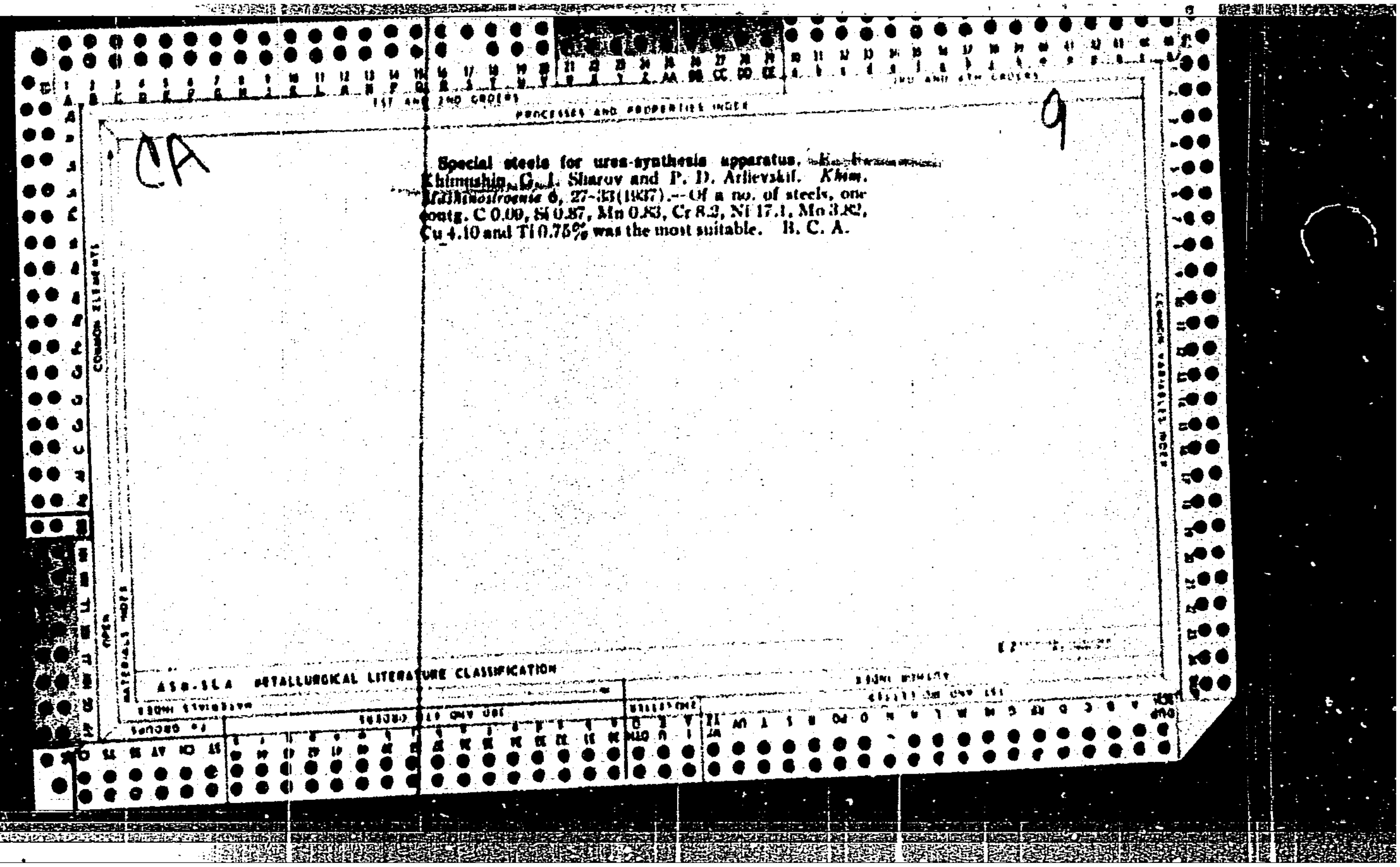
Chromium-manganese and chromium-manganese-nickel stainless steels. F. F. Khimushin and O. I. Kurova. *Kachestvennaya Stal'* 4, No. 6, 16-25(1936). *Met. Abstracts (in Metals & Alloys)* 8, 32.—A large no. of steels belonging to 12% Cr-5% Mn, 15% Cr-12% Mn and to 12% Cr-8% Mn types with and without Ni addns. and C variation were studied in detail to develop a steel suitable for aviation uses. The first group is martensitic after rapid cooling from 1150° unless 6-7% Ni is added. After the same treatment a steel with C 0.37, Si 0.24, Mn 8.90, Cr 12.4, Ni 4.13% had 121,750 lbs. per sq. in. tensile strength, with 50% elongation, being entirely austenitic. When to a steel contg. Cr 15 and Mn 12 is added C 0.32-0.42%, its structure after quenching from 1150° becomes entirely austenitic. With lower C content ferritic areas are present; with higher, formation of complex carbides is observed. The best results in this series were obtained with a steel contg.: C 0.32, Si 0.13, Cr 12.6%. Its tensile strength after a 1150° quench was 118,000 lb. per sq. in. and elongation 30.5%. Semi-com. heats made with 0.30% C, 0.8% max. Si, 8.0% Mn, 12% Cr and 4% Ni produced entirely satisfactory strip free from intercryst. attack. After heating at 500-900° all steels investigated had a pronounced intercryst. attack. M. W. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



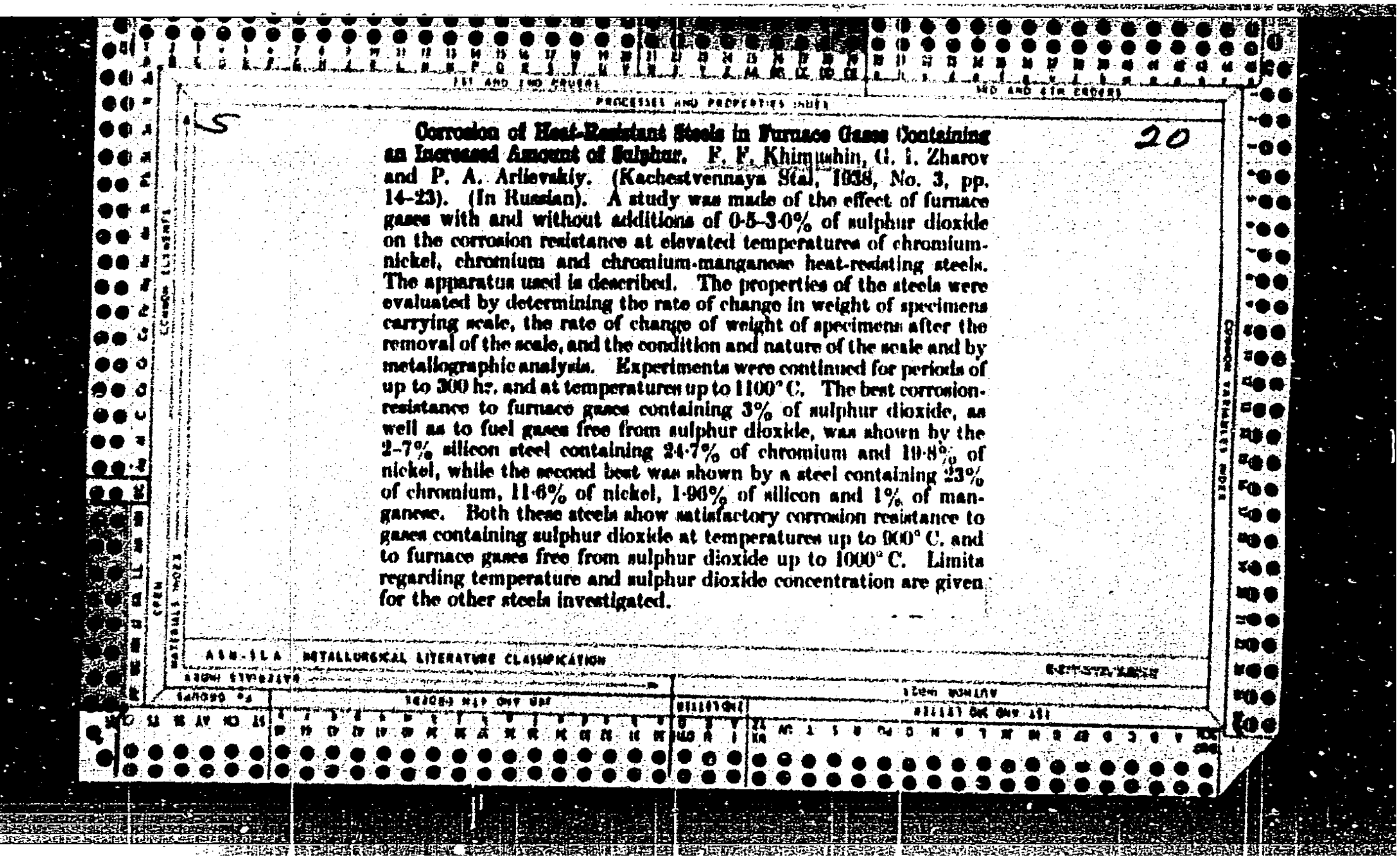
CA

9

PROCESSES AND PROPERTIES INDEX

Special steels for urea-synthesis apparatus. [illegible] Khimushin, G. I. Sharov and P. D. Arlievskii. *Khim. Mashinostroenie* 6, 27-33(1937).—Of a no. of steels, one contg. C 0.09, Si 0.87, Mn 0.83, Cr 8.2, Ni 17.1, Mo 3.82, Cu 4.10 and Ti 0.75% was the most suitable. B. C. A.

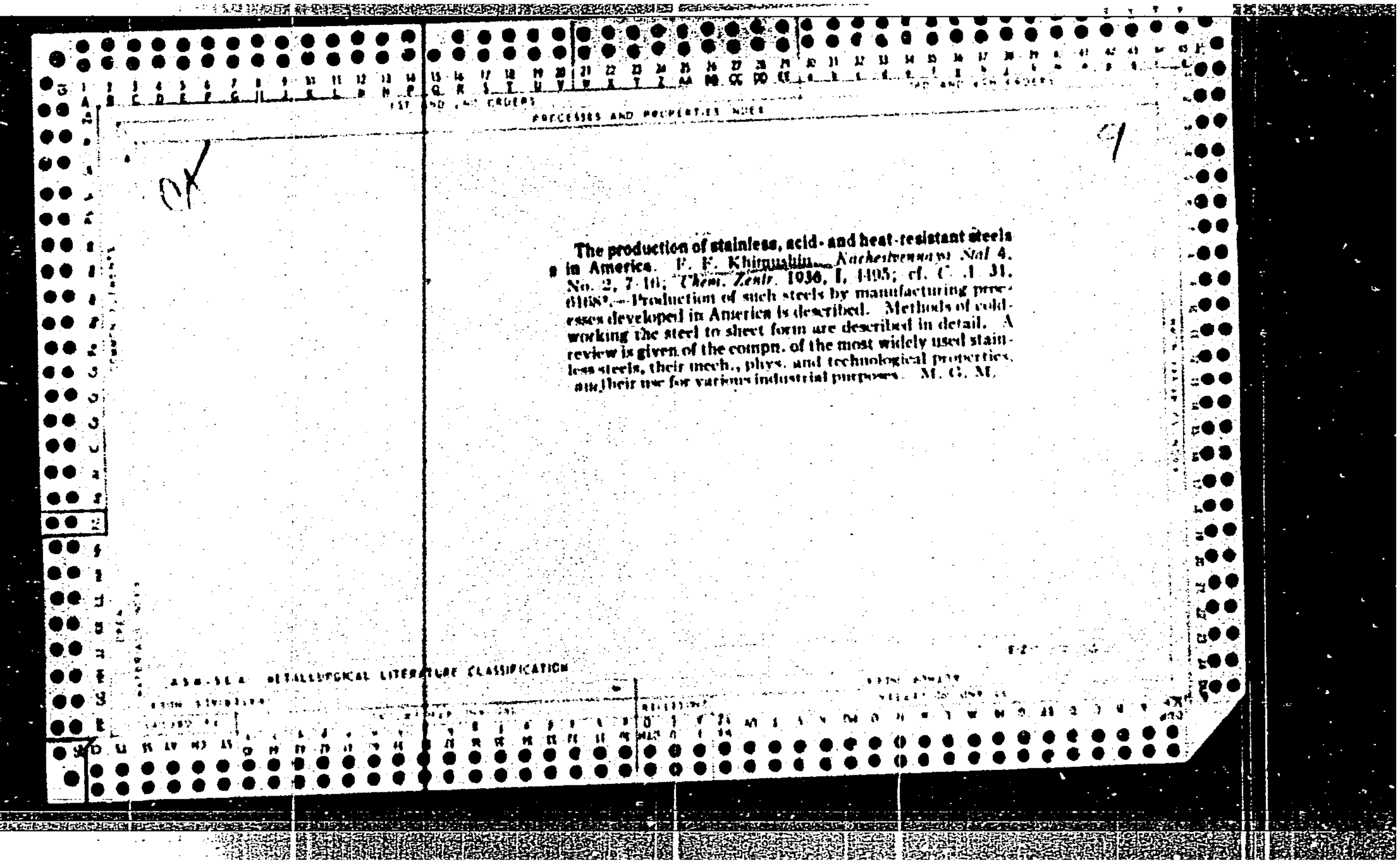
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



5

20

Corrosion of Heat-Resistant Steels in Furnace Gases Containing an Increased Amount of Sulphur. F. F. Khimushin, G. I. Zharov and P. A. Arlievskiy. (Kachestvennaya Stal, 1938, No. 3, pp. 14-23). (In Russian). A study was made of the effect of furnace gases with and without additions of 0·5–3·0% of sulphur dioxide on the corrosion resistance at elevated temperatures of chromium-nickel, chromium and chromium-manganese heat-resisting steels. The apparatus used is described. The properties of the steels were evaluated by determining the rate of change in weight of specimens carrying scale, the rate of change of weight of specimens after the removal of the scale, and the condition and nature of the scale and by metallographic analysis. Experiments were continued for periods of up to 300 hr. and at temperatures up to 1100° C. The best corrosion-resistance to furnace gases containing 3% of sulphur dioxide, as well as to fuel gases free from sulphur dioxide, was shown by the 2–7% silicon steel containing 24·7% of chromium and 19·8% of nickel, while the second best was shown by a steel containing 23% of chromium, 11·6% of nickel, 1·96% of silicon and 1% of manganese. Both these steels show satisfactory corrosion resistance to gases containing sulphur dioxide at temperatures up to 900° C. and to furnace gases free from sulphur dioxide up to 1000° C. Limits regarding temperature and sulphur dioxide concentration are given for the other steels investigated.



PROCESSES AND PROPERTIES INDEX

The production of stainless, acid- and heat-resistant steels in America. F. F. Khimushin. *Kachestvennaya Stal* 4, No. 2, 7-10; *Chem. Zentr.* 1936, I, 4405; cf. C. A. 31, 6168^{9}.—Production of such steels by manufacturing processes developed in America is described. Methods of cold-working the steel to sheet form are described in detail. A review is given of the compn. of the most widely used stainless steels, their mech., phys. and technological properties, and their use for various industrial purposes. M. G. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

Cr

1

Corrosion resistance of stainless steels. F. F. Khimushin and A. A. Kovaleva. *Khim. Mashinostroenie* 8, No. 8, 14-22(1939).—The corrosion resistance of stainless Mn and Cr steels was investigated to det. their suitability as substitutes for 18-8 steels in *equipment for HNO_3 manuf.* The effects of Ti and Cb upon the properties of 17% Cr steels were also studied. The following steels were tested: (*a*) C 0.12-0.51, Si 0.07-0.98, Mn 0.69-18.0, Cr 18.2-19.0%; (*b*) C 0.07-0.23, Si 0.50-1.40, Mn 8.50-9.32, Cr 17.1-18.9, Ni 3.14-3.08, Ti 0.11-1.65%; (*c*) C 0.05-0.18, Si 0.48-2.30, Mn 0.21-0.91, Cr 16.4-17.7, Ni 8.0-9.47, Ti 0.12-0.77, Cb 1.24%. The steel specimens were subjected to a definite heat-treatment after which their corrosion resistance was measured by detg. their wt. loss in boiling 50 and 60% HNO_3 after 25-hr. intervals. The results are given in tables and in curves. On the basis of their corrosion resistance in boiling 50% HNO_3 the steels contg. 18% Cr and 9-17% Mn are considered of little value for use in app. for HNO_3 manuf. Addn. of about 3% Ni to Cr-Mn (18-9) steels greatly improved their corrosion resistance. Addn. of Ti to Cr-Mn-Ni (9-18-3) steels did not affect the corrosion resistance, but when the Ti content is five times as large as that of C, the steels will show a tendency to intercryst. corrosion after having been heated to 500-700°. When the Ti/C ratio is less than 5 then the steel becomes sensitive to intercryst. corrosion after welding or heating at 500-900°. Cr-Mn-Ni (9-18-3) steels with and without Ti are considered suitable for app. in HNO_3 manuf. With regard to their mech. and corrosion-resistance properties the Cr-Ni steels contg. Cb differed little from 18-8 steels. The electrode potentials of the stainless steels in HNO_3 were also detd. By increasing the HNO_3 concn. from 6.3 to 50% the value of the electrode potentials increased at first and then became nearly const. An increase in temp. had similar results but to a lesser degree. The formation of the passive film in cold 50% HNO_3 was due to the Cr and not to Mn or Ni. For welded app. the following steels should be tried: C 0.14%, Mn 9%, Cr 18, Ni 3% and five times as much Ti as C. For welded app. which can be heat-treated at 1100° and then quenched in water the following steel is suggested: C 0.14, Mn 9, Cr 18 and Ni 2-4%. For riveted app. the steel contg. 17% Cr and 0.12% C is recommended.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

5

High-Strength 18/8 Stainless Steel Wire for Cables. F. Khimushin, S. Ratner and Z. Rudbakh. (Stal, 1939, No. 8, pp. 40-46). (In Russian). Earlier work and recommendations regarding the drawing, heat treatment, pickling, lubrication and polishing of stainless-steel wire are critically summarised. Regarding intermediate annealing, the authors point out that a "recovery" anneal at 820-850° C. is preferable to the high-temperature (925-955° C.) annealing which has been suggested. The lower temperature reduces scaling losses. The two steels used in the investigations were *EYa1* and *EYa2*, containing carbon 0·10% and 0·10%, silicon 0·37% and 0·58%, chromium 17·05% and 17·35%, and nickel 8·92% and 9·40%, respectively. A very wide study was made of the effect of the wire-drawing and heat-treatment schedules on the properties of the wire obtained, which included the tensile strength, ductility, resistance to torsion, hardness and magnetic properties. The question of lubrication and, in conclusion, the tensile and fatigue strength of cables receive some mention. The best method of wire-drawing was found to be to use total drafts of 55-60% (individual drafts of 20-30%), except for the final draft, with intermediate anneals at 840-860° C. Before finish-drawing, the wire was quenched from 1100-1150° C., and the final drawing was effected with individual drafts of 10% and a total of 93-94% reduction. Wire produced in this way had a tensile strength of 240-260 kg. per sq. mm. and in general was equal to imported American wire. The above very large drafts and the resulting mechanical properties could be obtained only by using a zinc coating as a lubricant. The use of steel *EYa1* with the lower carbon content was preferable. The zinc coating was removed by pickling in weak acid and the wire was polished by drawing.

KHIMUSHIN, F. F.

"Heat-Resistant Steels for Aircraft Motors," Gosudarstvennoye Izdatel'stvo Oboronnoy Promyshlennosti, 1942. 424 pp.

Comments and evaluation B-77881, 16 Aug 54

B-59660-

KHIMUSHIN, F. F.

Nerzhaveiushchie, kislotoupornye i zharoupornye stali; pod red. N. N. Timoshenko. Moskva, Gos. nauch. - tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1945. 479 p., illus.

Bibliography: p. 452-479.

Title tr.: Acid- and heat-resisting stainless steels.

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

Khimushin, F.F.

AUTHORS Blok, N.I., Lashko, N.F., Sorokina, K.P., Khimushin, F.F.

32-8-3/61

TITLE The Phase Analysis of Chromium-Nickel-Titanium Steels with Intermetallic Binding. (Fazovyy analiz khromonikeltitanovykh staley s intermetallidnym uprochneniyem.)

PERIODICAL Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 8, pp.901-903 (USSR)

ABSTRACT In the paper a new method of the electrolytical distribution of phases in steel types with intermetallic binding is shown. A typical kind of steel (0,05% C; 19,45 % Ni; 2,53 % Ti; 11,65 % Cr; 0,85 % Al; 0,02 % B) was used as testing object. The action of the pH of the solution, temperature and current density were investigated. The following best suitable electrolysis conditions for the separation of quantitative anode precipitations were determined: current density 0,05 a/cm^2, temperature of the tank $< 10^\circ$, pH from 2,2 to 4,9. In order to avoid oxygen separation on the anode 10% CH$_3$OH was added to the tank. The concentration of copper sulfate should not exceed 5 % because of the increase in acid development. For buffering the solution 8 % triply substituted ammonium citrate is added. The

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The ysis of Chromium-Nickel-Titanium Steels with Intermetallic Binding. 32-8-3/61

temperature in the tank has to be kept at 0°C. In the given case it was found out that in the above-mentioned steel sample the following is to recommended for the phase analysis: an electrolyte of 50 g CuSO$_4$, 80 g triply substituted ammonium citrate, 100 ml methanol per 1 liter water, current density D = 0,05 % a/cm^2, pH = 4-4,5, temperature of the tank 0-5°C, duration of the electrolysis 2-3 hours. For the chemical analysis the anode deposits are quantitatively separated. Their X-ray structure analysis is performed according to the method by Pulver in Kα-radiation. In the case of most steel alloys the phase β-Ni$_3$Ti remains metastable and upon alloy formation it is converted into the α-Ni$_3$Ti stable modification. In the aging process the phase may partially alter. The high quality properties of the steel alloy are due to the dispersive ability of the β-Ni$_3$Ti phase. Due to aging within the temperature interval 650-875°C β-Ni$_3$Ti phase is separated and converted into melt. (5 illustrations and 2 tables)

ASSOCIATION: None given.

AVAILABLE: Library of Congress.

CARD 2/2

DHIMYSHIN, F.P

AL'TGAUZEN, O.N., kandidat fiziko-matematicheskikh nauk; **BERNSHTEYN**, M.L., kandidat tekhnicheskikh nauk; **BLANTER**, M.Ye., doktor tekhnicheskikh nauk; **BOKSHTEYN**, S.Z., doktor tekhnicheskikh nauk; **BOLKHOVITINOVA**, Ye.N., kandidat tekhnicheskikh nauk; **BORZDYKA**, A.M., doktor tekhnicheskikh nauk; **BUNIN**, K.P., doktor tekhnicheskikh nauk; **VINOGRAD**, M.I., kandidat tekhnicheskikh nauk; **VOLOVIK**, B.Ye., doktor tekhnicheskikh nauk [deceased]; **GAMOV**, M.I., inzhener; **GELLER**, Yu.A., doktor tekhnicheskikh nauk; **GORELIK**, S.S., kandidat tekhnicheskikh nauk; **GOL'DENBERG**, A.A., kandidat tekhnicheskikh nauk; **GOTLIB**, L.I., kandidat tekhnicheskikh nauk; **GRIGOROVICH**, V.K., kandidat tekhnicheskikh nauk; **GULYAYEV**, B.B., doktor tekhnicheskikh nauk; **DOVGALEVSKIY**, Ya.M, kandidat tekhnicheskikh nauk; **DUDOVTSEV**, P.A., kandidat tekhnicheskikh nauk; **KIDIN**, I.N., doktor tekhnicheskikh nauk; **KIPNIS**, S.Kh., inzhener; **KORITSKIY**, V.G., kandidat tekhnicheskikh nauk; **LANDA**, A.F., doktor tekhnicheskikh nauk; **LEYKIN**, I.M., kandidat tekhnicheskikh nauk; **LIVSHITS**, L.S., kandidat tekhnicheskikh nauk; **L'VOV**, M.A., kandidat tekhnicheskikh nauk; **MALYSHEV**,K.A., kandidat tekhnicheskikh nauk; **MEYERSON**, G.A., doktor tekhnicheskikh nauk; **MINKEVICH**, A.N., kandidat tekhnicheskikh nauk; **MOROZ**, L.S., doktor tekhnicheskikh nauk; **NATANSON**, A.K., kandidat tekhnicheskikh nauk; **NAKHIMOV**, A.M., inzhener; **NAKHIMOV**, D.M., kandidat tekhnicheskikh nauk; **POGODIN-ALEKSEYEV**, G.I., doktor tekhnicheskikh nauk; **POPOVA**, N.M., kandidat tekhnicheskikh nauk; **POPOV**, A.A., kandidat tekhnicheskikh nauk; **RAKHSHTADT**, A.G., kandidat tekhnicheskikh nauk; **ROGEL'BERG**, I.L., kandidat tekhnicheskikh nauk;

(Continued on next card)

AL'TGAUZEN, O.N.---- (continued) Card 2.
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[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaia obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshtadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)
(Steel--Heat treatment) (Iron--Heat treatment)
(Physical metallurgy)

KHIMUSHIN, Fedor Fedorovich

PHASE I BOOK EXPLOITATION

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Malyshev, Anatoliy Ivanovich, Rakovskiy, Valentin Sergeyevich, Telis, Mikhail Yakovlevich and Khimushin, Fedor Fedorovich

Tekhnologiya metalov i aviatsionnyye materialy (Technology of Metals and Aircraft Materials) Moscow, Oborongiz, 1957. 358 p. 11,000 copies printed.

Ed.: Samokhotskiy, A. I., Engineer;Ed. of Publishing House: Loseva, G.F.; Tech. Ed.: Zudakin, I.M.; Managing Ed. (Oborongiz): Sokolov, A. I.

PURPOSE: This is a textbook for aircraft-manufacture tekhnikums offering the course "Technology of Metals and Aircraft Materials".

COVERAGE: The book deals with the following subjects; ferrous and nonferrous metallurgy, metallography and heat treatment of metals, aircraft materials, casting, plastic deformation of metals, welding, soldering, and cutting. There are 12 Soviet references.

Card ~~1/18~~

F.F.Khimushin

AUTHOR: Gulyayev, B.B. SOV/24-58-4-37/39

TITLE: Conference on Crystallisation of Metals (Soveshchaniye po kristallizatsii metallov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 153 - 155 (USSR)

ABSTRACT: This conference was held at the Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the Ac.Sc. USSR) on June 28-31, 1958. About 400 people participated and the participants included specialists in the fields of foundry, metallurgy, crystallography, physics, welding, heat, physical chemistry, mathematical physics and other related subjects. In addition to Soviet participants, foreign visitors included Professor D. Csikl (East Germany) and N.I. Chvorinov (Czechoslovakia). This conference on crystallisation of metals was the fourth conference relating to the general problem of the theory of foundry processes.

Crystallisation of Steel and Alloys with Special Properties. The following papers were read: V.I. Lapitskiy, N.I. Stupar', K.P. Rudachev, V.L. Olekseyenko, A.I. Marinov - "Certain Methods of Reducing Non-uniformities of Large Castings (up to 20 t) made of Rimming Steel"; V.K. Novitskiy, A.B. Mikul'chin and V.V. Blinov - "Influence of Internal Crystallisers on the Structure and Properties of Steel Ingots"; N.I. Chvorinov (Czechoslovakia) - "On the Crystallisation of Steel"; A.P. Pronov - "Crystallisation of Continuously Cast Ingot and Influence on it of the Properties of

Card6/10 Liquid Steel"; L.I. Morozenskiy and O.D. Zigel' - "Influence of Movement of the Metal in the Liquid Core on the Crystallisation of Steel Ingots and Castings"; N.N. Guglin, A.A. Novikova and B.B. Gulyayev - "Crystallisation and Mechanical Properties of Steels at Elevated Temperatures"; V.Ye. Neymark - "Influence of Inoculation on the Deformation of the Crust and the Speed of Solidification of Ingots"; G.P. Ivanov "Thermal Stresses and Deformation in the Crust of a Crystallising Ingot"; V.O. Gruzin and P.I. [illegible] dealt with problems of formation of the primary structure of structural steel and the influence on it of the temperature of pouring.

The features of crystallisation of castings made of alloys with special properties and of austenitic steels were dealt with in the following papers: I.I. Gorynov - "Influence of Inoculation on the Structure and on the Physico-mechanical Properties of High-alloy Steels"; F.F. Khimushin, P.V. Aksenov, E.F. Lashko and E.Ya. Rodina - "Occurrence of Non-uniformities in High-temperature alloys During Crystallisation and Heat

Card7/10 Treatment" and "Experimental Investigation of the Process of Crystallisation of Cast Blades Made of Refractory Alloys"; A.M. Yuferov considered the process of recrystallisation of steel.

KHIMUSHIN, F.F.

PHASE I BOOK EXPLOITATION SOV/1538

Moscow. Dom nauchno-tekhnicheskoy propagandy im. F.E. Dzerzhinskogo

Sovremennyye splavy i ikh termicheskaya obrabotka (Contemporary Alloys and Their Heat Treatment) Moscow, Mashgiz, 1958. 329 p. 12,000 copies printed.

Additional Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Ed. (Title page): Yu. A. Geller, Doctor of Technical Sciences; Ed. (Inside book): V.V. Rzhevinskiy, Engineer; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Metal Working and Tool Making: R.D. Beyzel'man, Engineer.

PURPOSE: The book is intended for engineering and technical personnel of heat-treatment shops and test laboratories of machine-building plants.

COVERAGE: This collection of 28 articles, compiled by 33 authors, aims to acquaint the reader with modern practice in the heat treatment of steels. The authors are primarily concerned with the development of various types of structural, tool, and heat-resistant steels and with the use of their alloying elements. Materials-handling equipment is described at some length. The treatment of alloys, particularly those of titanium, also comes within the scope of the collection. The book is thoroughly diagrammed, and a good deal of the material is shown in graphical form. Among the problems dealt with are the minimization of deformations, the introduction of the automatic control of heat-treating equipment, together with fully mechanized tool manufacture, and the optimum proportions of different alloying elements. There are numerous tables and drawings. Bibliographic listings placed at the end of chapters are predominantly Soviet. The articles comprising this collection are reports delivered at a conference held in the Scientific and Technical Propaganda House imeni F.E. Dzerzhinskiy in Moscow.

Contemporary Alloys and Their Heat Treatment SOV/1538

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SOV/81-59-20-71772

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 20, p 279 (USSR)

AUTHORS: Khimushin, F.F., Istrina, Z.F.

TITLE: The Study of the Trend of Chromium-Nickel Steels of 0Kh18N9, IKh18N9 and IKh18N9T Grades to Intercrystallite Corrosion

PERIODICAL: Sb. statey. Vses. n.-i. i konstrukt. in-t khim. mashinostr., 1958, Vol 25, pp 11 - 46

ABSTRACT: With the aim of studying the causes of the discrepancy between the results of the test for intercrystallite corrosion (IC) of IKh18N9T steel by the methods A and B of the State Standard GOST 6032-51 and also the effect of the chemical composition of Cr-Ni-steels and of the thermal treatment on their inclination to IC, steels of 0Kh18N9, IKh18N9 and IKh18N9T grades were investigated. The samples of them were subjected to hardening at 1,050°C, hardening at 1,200°C or 2-hour heating at 870°C, after which they were kept for another 2 hours at 500, 600, 650, 700, 800, 900 and 1,000°C. The samples were tested by the methods A and B and also in boiling 60%-HNO_3. The B method is more sensitive for determining the trend to IC than the A method, but

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SOV/81-59-20-71772

The Study of the Trend of Chromium-Nickel Steels of OKh18N9, IKh18N9 and IKh18N9T Grades to Intercrystallite Corrosion

if the time of testing by the A method is increased, both methods show practically the same results, even for steels with a low trend to IC. The inspection of the grid of anode etching at a 85-diameter magnification shows considerably clearer results than at 25-diameter magnification, especially in the case of fine-grained structure. In steels of IKh18N9T grade, even with the ratio Ti/C $\geqslant 5$ an inclination to IC can be detected. The increase in the quantity of carbon which is not bound into carbides promotes the formation of an IC trend in the steel IKh18N9T. After stabilizing tempering of hot-rolled IKh18N9T steel at 870°C for two hours, 2-hour heatings carried out in the dangerous temperature zone did not cause an IC trend, but the corrosion rate in HNO_3 after such treatment can reach 33 g/m^2 hr. If prior to the stabilizing tempering the steel is hardened at 1,050°C, the corrosion resistance in boiling HNO_3 increases sharply. It was not possible in the research work to connect the increased corrosion in HNO_3 with the formation of the σ-phase in the steel. In connection with the formation of an IC trend in IKh18N9T steel assumptions on the necessity of reconsidering the chemical composition of IKh18N9T

Card 2/3

KHIMUSHIN, F.F.

PHASE I BOOK EXPLOITATION SOV/3559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 423 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Ageyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.M. Pavlov, and I.F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and W on the heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

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SLOMYANSKAYA, F.B., kand.tekhn.nauk [deceased]; SHVARTS, G.L., kand.tekhn.nauk; KHIMUSHIN, F.F., kand.tekhn.nauk; ISTRINA, Z.F., inzh.; SIDORKINA, Yu.S., inzh.

Testing for intercrystalline corrosion of stainless austenite and austenite-ferrite steels. Trudy NIIKHIMMASH no.27:3-53 '59. (MIRA 14:8)

(Steel, Stainless--Testing)

PHASE I BOOK EXPLOITATION SOV/4535

Vsesoyuznyy sovet nauchno-tekhnicheskikh obshchestv

Mezhkristallitnaya korroziya i korroziya metallov v napryazhennom sostoyanii (Intercrystalline and Stress Corrosion of Metals) Moscow, Mashgiz, 1960. 358 p. 3,000 copies printed.

Ed.: I.A. Levin, Candidate of Technical Sciences; Ed. of Publishing House: I.I. Lesnichenko, Engineer; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on Metalworking and Instrument Making (Mashgiz): V.V. Rzhavinskiy, Engineer; Editorial Board: I.A. Levin, Candidate of Technical Sciences (Chairman), V.P. Batrakov, Candidate of Technical Sciences, V.M. Nikiforova, Candidate of Technical Sciences, and A.V. Turkovskaya, Candidate of Technical Sciences.

PURPOSE: This collection of articles is intended for technical personnel concerned with problems of corrosion of metals.

COVERAGE: The collection contains discussions of intercrystalline corrosion of stainless steels and stress corrosion of carbon steels, low-alloy and stainless steels, and light-weight and nonferrous alloys. The tendency of steels of various composition and system to corrode under certain conditions is discussed and the nature of corrosion and corrosion cracking is analysed. No personalities are mentioned. Most of the articles are accompanied by bibliographic references, the majority of which are Soviet.

II. INTERCRYSTALLINE CORROSION OF STAINLESS STEELS

Card 4/9

Khimushin, F.F.

S/125/61/000/003/009/016
A161/A133

AUTHORS: Safonnikov, A.N.; Medovar, B.I.; Kontorovich, L.Ye.; Khimushin, F.F.

TITLE: Heat-resistant ЭИ703 (EI703) alloy welded by electro-slag process with plate electrodes

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PERIODICAL: Avtomaticheskaya svarka, no. 3, 1961, 68 - 74

TEXT: The EI703 alloy is a substitute of the ЭИ435 (EI435) and ЭИ602 (EI602) nickel alloys used for combustion chambers and rings in gas turbines. It has a slightly higher heat-resistance at high temperatures than EI435 and nearly the same as EI602, and a high ductility. Its chemical composition is the following: 0.06 - 0.12% C, ≤0.8% Si, ≤0.7% Mn, ≤0.020% S, ≤0.030% P, 20 - 23% Cr, 35 - 40% Ni, 2.5 - 3.5% W, 0.7 - 1.2% Ti, or 1.2 - 1.7% Nb, ≤0.5% Al, 0.05% Ce. The article presents details of electro-slag welding tests with EI703 alloy forgings with 120 by 120 mm cross section area, produced by the "Elektrostal'" Plant. Plate electrodes used as filler metal had the same width as the forgings being joined, and 12 to 18 mm thickness. The welding equipment consisted of a A-550 apparatus and a ТШС-3000/1 (TShS-3000/1) transformer. The A-550 welder permit-

Card 1/3

S/125/61/000/003/009/016
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Heat-resistant ЭИ703 (EI703) alloy welded by....

ting plate electrode feed variations in a range of from 0.9 to 17 m/h had been described (Ref. 2: Opyt vnedreniya avtomata A-550 dlya elektroshlakovoy svarki plastinchatym elektrodom. Avtomaticheskaya svarka, no. 11, 1959). Four types of flux were tried: three fused fluoride type АНФ-6 (ANF-6), АНФ-7 (ANF-7), and АНФ-14 (ANF-14) and nonfused АНФ-1 (ANF-1) (fluorite concentrate). The latter flux proved not suitable for the EI703 alloy because of a dangerous defect - the weld metal did not fuse with the base metal. [Abstracter's note: The chemical composition of the fluxes is not given.] The following welding technology is recommended as a result of experiments welding the EI703 alloy with EI703 plate electrodes and the base metal dimensions as above (120 x 120 mm): plate electrode 12 by 120 mm; 1,500 ÷ 2,000 amp; plate electrode feed velocity 2.2 ÷ 2.5 m/h; starting voltage 33 v; voltage in established process 28 ÷ 31 v; either ANF-14 or ANF-7 flux; flux quantity of 300 g; slag pool depth of 18 mm; gap between welded elements 40 mm. The soundness of joint is illustrated in a photo. The mechanical strength of welds was slightly lower than that of the base metal, but the heat resistance was close to the one required by specifications. It is stressed that the required quality of welded joints is only possible when the prescribed process technology is followed strictly. Hot cracks are possible when the metal pool is deep. The rupture strength of the welded joints amounted to

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about 75% of the heat resistance of base metal. Technician B.R. Kleinerman is mentioned having participated in the tests. There are 6 figures, 3 tables and 4 Soviet-bloc references.

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